

Patent Claims

1. A stacked plate heat exchanger, comprising a
5 multiplicity of plates (12, 13) of a first type and a
second type stacked on top of one another so as to form
flow passages for a first medium and a second medium,
the plates (12, 13) forming a heat exchanger block (2)
having a top side and an underside and having in each
10 case two opposite side faces (10) and end faces (9),
and the first flow passages for the first medium being
closed at the peripheral side and being in fluid
communication with distribution and collection
passages, which are arranged perpendicular to the plane
15 of the plates and respectively open out into inlet and
outlet connection pieces (6, 7) arranged on the top
side and/or underside (3, 11), characterized in that
the second flow passages (24) are designed to be
largely open at the end faces (9) and closed at the
20 side faces (10), and in that the open sides (9) form an
inlet plane and an outlet plane for the second medium.

2. The plate heat exchanger as claimed in claim 1,
characterized in that an inlet box and an outlet box
25 (4, 5) for the second medium are connected to the end
faces (9).

3. The plate heat exchanger as claimed in claim 2,
characterized in that the inlet and outlet boxes (4, 5)
30 are each designed as independent structural units and
can be joined to the heat exchanger block (2).

4. The plate heat exchanger as claimed in claim 2 or
3, characterized in that the inlet and outlet boxes (4,
35 5) have inlet and outlet connection pieces (8) that are
aligned with one another.

5. The plate heat exchanger as claimed in claim 2 or

3, characterized in that at the inlet and outlet boxes (4, 5) the inlet and outlet connection pieces (8) are arranged at a predeterminable angle of up to 90° with respect to the main direction of flow.

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6. The plate heat exchanger as claimed in one of the preceding claims, characterized in that the inlet and/or outlet boxes (4, 5) are formed by bent sheet-metal strips and cover plates (3a, 11a; 3b, 11b) which protrude beyond the end faces (9).

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7. The plate heat exchanger as claimed in one of the preceding claims, characterized in that the first type of plate (12) has a recess (17) with a surrounding flat fold (12a), in that the second type of plate (13) has a planar region (13b) covering the fold (12a), and in that the first and second types of plates (12, 13) are joined to one another in the region of the fold (12a) and between them enclose the first flow passage for the first medium.

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8. The plate heat exchanger as claimed in claim 7, characterized in that the second flow passages (24) for the second medium are in each case arranged adjacent to the first flow passages.

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9. The plate heat exchanger as claimed in one of claims 1 to 8, characterized in that the distribution and collection passages (22, 23) are formed by passage sections (18, 19; 20, 21) which are arranged between the plates (12, 13) and connect the latter.

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10. The plate heat exchanger as claimed in claim 9, characterized in that the passage sections are designed as cup-like elevations (18, 19; 20, 21) and are shaped out of the plates (12, 13).

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11. The plate heat exchanger as claimed in claim 10,

characterized in that the cup-like elevations (18, 19; 20, 21) are arranged outside the main direction of flow.

5 12. The plate heat exchanger as claimed in one of claims 1 to 11, characterized in that metal turbulence plates (14) are arranged in the first and/or second flow passages (24).

10 13. The plate heat exchanger as claimed in one of claims 1 to 12, characterized in that the second type of plates (13) have lateral flanged edges (13a) which close off the second flow passages (24) with respect to the outside and form the side faces (10).

15 14. The plate heat exchanger as claimed in claim 13, characterized in that the flanged edges (28a) are angled once and form an overlap a with the flanged edge (28a) of the adjacent second type of plate (28).

20 15. The plate heat exchanger as claimed in claim 13, characterized in that the flanged edges (13a) are angled twice and form a C section (13c) which bears against an adjacent second type of plate (13).

25 16. The plate heat exchanger as claimed in claim 13, characterized in that the flanged edges (30a) form a C section (30c) which bears against the adjacent first type of plate (31, 32).

30 17. The plate heat exchanger as claimed in claim 13, characterized in that the first type of plates (34) have lateral flanged edges (36a), and in that the flanged edges (36a, 35a) of the first and second types
35 of plates (34, 35) are oppositely directed and are arranged so as to bear against one another.

18. The plate heat exchanger as claimed in claim 13,

characterized in that the flanged edge (39a) is angled twice and forms a C section with a free limb (39c) which on one side bears against the adjacent first type of plate (38, 40a) and on the other side bears against
5 the adjacent second type of plate (39, 39b).

19. A charge air/coolant cooler having the plate heat exchanger as claimed in one of claims 1 to 18.

10 20. An exhaust gas/coolant cooler having the plate heat exchanger as claimed in one of claims 1 to 18.